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ABSTRACT

This document presents information about the apprenticeship training program of Alberta, Canada, in general and the concrete finishing program in particular. The first part of the document discusses the following items: Alberta's apprenticeship and industry training system; the apprenticeship and industry training committee structure; local apprenticeship committees; provincial apprenticeship committees; the Alberta Apprenticeship and Industry Training Board; safety education; legal and administrative aspects of safety; technical training establishment; procedures for recommending revisions to the course outline; the apprenticeship route toward certification as a concrete finisher; and a concrete finisher training profile. The second part of the document presents course outlines for the first and second periods of technical training. Selected topics covered in the two periods are as follows: measuring and layout tools; cutting and demolition tools; placing tools; tools for surface treatment of concrete; mixing and conveying equipment; floats and trowels; sidewalks; safety regulations and procedures; personal protective equipment; fires and controls; safety and maintenance for power tools and equipment; Portland cements; air entrainment; concrete aggregates; transporting concrete; concrete finishing; concrete joints; concrete curing methods; applied mathematics; measurement systems; blueprints; and workplace coaching skills and advisory methods. The course outlines detail course topics, intended outcomes, specific behavioral objectives, and times allotted for each topic covered. (MN)

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APPRENTICESHIP TRAINING

ED 481 358

CONCRETE FINISHER Program

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CONCRETE FINISHER

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APPRENTICESHIP AND INDUSTRY TRAINING SYSTEM

Apprenticeship is post-secondary education with a difference. It helps ensure Alberta has a steady supply of highly-skilled employees, the foundation of our economy's future health and competitiveness.

Apprentices in more than 50 trades and crafts spend between one and four years learning their trade - 80% of the time on the job under the supervision of a certified journeyman or qualified tradesperson. The balance of the program is technical training in the theory, skills and technologies of their trade.

To become certified journeymen apprentices must learn theory and skills, and they must pass examinations. Requirements for certification—including the content and delivery of technical training—are developed and updated by the Alberta Apprenticeship and Industry Training Board (the Board) and a network of local and provincial industry committees.

The graduate of the Concrete Finisher apprenticeship training is a journeyman who will be able to:

- understand the C.S.A. and other standards that apply to cement and concrete.
- perform tests to confirm concrete quality.
- interpret building codes, plans and specifications as they apply to the trade.
- place and finish concrete in a professional manner.
- cut, patch, maintain and repair concrete structures.

APPRENTICESHIP AND INDUSTRY TRAINING COMMITTEE STRUCTURE

While government supports Alberta's apprenticeship and industry training system, it is driven by industry, a term which includes both employers and employees. The Alberta Apprenticeship and Industry Training Board, with the support of Alberta Learning, oversees the system. But the system relies on a network of industry committees. These committees include local and provincial apprenticeship committees (LACs and PACs) in the designated trades and occupational committees in the designated occupations, as well as other committees such as provisional committees established before the designation of a new trade or occupation comes into effect. All these committees are composed of equal numbers of employers and employees. The network of industry committees is the foundation of Alberta's Apprenticeship and Industry training system.

LOCAL APPRENTICESHIP COMMITTEES (LAC)

Wherever there is activity in a trade, the Board can set up a LAC. The Board appoints equal numbers of employees and employers for terms of up to three years. The committee appoints a member as presiding officer.

Local Apprenticeship Committees:

- monitor the apprenticeship system, and the progress of apprentices in their trade, at the local level.
- help settle certain kinds of issues between apprentices and their employers.
- recommend improvements in apprenticeship training and certification to their trade's PAC.
- make recommendations to the Board regarding the appointment of members to their trade's PAC.

PROVINCIAL APPRENTICESHIP COMMITTEES (PAC)

The Board establishes a PAC for each trade and, based on PAC recommendations, appoints a presiding officer and equal numbers of employees and employers for terms of up to three years. Most PACs have nine members.

Provincial Apprenticeship Committees:

- identify the training needs and content for their trade.
- recommend to the Board the standards for training and certification for their trade.
- monitor the activities of local apprenticeship committees in their trade.
- make recommendations to the Board about the designation of trades and occupations.
- determine whether training of various kinds is equivalent to training provided in an apprenticeship program in the trade.
- may participate in resolving any apprenticeship-related disputes between employers and employees.

Concrete Finisher PAC Members

Mr. E. Kalis ..... Edmonton.....Presiding Officer
Mr. W. Martin..... Calgary.....Employer
Mr. B. Shandro ..... Edmonton.....Employer
Mr. T. Krawec ..... Edmonton.....Employer
Mr. L Cooper ..... Edmonton.....Employee
Mr. D. Bogue ..... Calgary.....Employee
Mr. S. Fraser ..... Calgary.....Employee
Mr. R. Allen..... Edmonton.....Employee

THE ALBERTA APPRENTICESHIP AND INDUSTRY TRAINING BOARD (BOARD)

The mandate of the Alberta Apprenticeship and Industry Training Board relates to the standards and requirements for training and certification in programs under the *Apprenticeship and Industry Training Act*. The Board provides advice to the Minister of Learning on the training and certification of people in designated trades and occupations and on the needs of the Alberta labour market for skilled and trained persons. The Board also makes orders and regulations respecting standards and requirements for apprenticeship programs and the training of apprentices and for training and certification in designated trades and occupations, and the criteria or requirements for granting and recognizing trade and other certificates.

The 13-member Board consists of a chairman, eight members representing trades and four members representing other industries. The trades and other industry members are equally represented by employer and employee representatives.

SAFETY EDUCATION

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance in apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of government, employers, employees and the public. Therefore, it is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to or cause an accident or injury.

It is generally recognized that a safe attitude contributes to an accident free environment. Everyone will benefit as a result of a healthy, safe attitude towards prevention of accidents.

A tradesperson is possibly exposed to more hazards than any other person in the work force and, therefore, should be familiar with and apply the Occupational Health and Safety Act and Regulations dealing with personal safety and the special safety rules applying to each task.

LEGAL AND ADMINISTRATIVE ASPECTS OF SAFETY

Accident prevention and the provisions of safe working conditions are the responsibilities of an employer and employee.

Employer's Responsibilities

The employer is responsible for:

- providing and maintaining safety equipment, and protective devices and clothing
- enforcing safe working procedures
- providing safeguards for machinery, equipment and tools
- observing all accident prevention regulations
- training employees in the safe use and operation of equipment.

Employee's Responsibilities

The employee is responsible for:

- working in accordance with the safety regulations pertaining to the job environment
- working in such a way as not to endanger themselves or fellow employees.

Workplace Health and Safety's Responsibilities

Workplace Health and Safety (Alberta Human Resources and Employment) will conduct periodic inspections of the workplace to ensure that safety regulations for industry are being observed.

Technical Training Institutions

Alberta Learning, Apprenticeship and Industry Training offer your apprenticeship training program. Staff and facilities for delivering the program are supplied by:

- Southern Alberta Institute of Technology

PROCEDURES FOR RECOMMENDING
REVISIONS TO THE COURSE OUTLINE

This course outline has been prepared by the Industry Programs and Standards of the Apprenticeship and Industry Training in partnership with the Provincial Apprenticeship Committee for the trade.

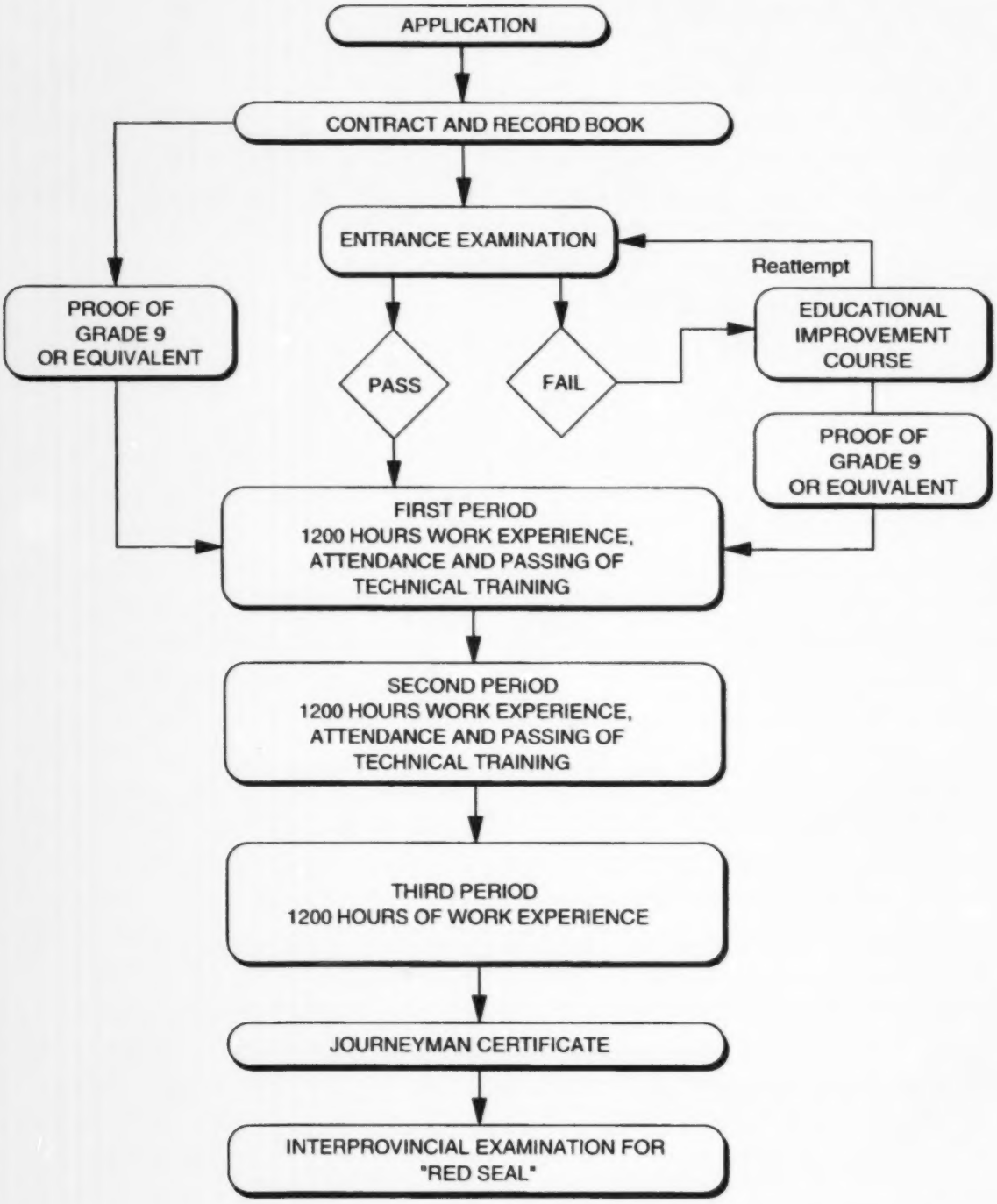
This course outline was approved on April 17, 2000 under the authority of the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. Valuable input is acknowledged from industry and the institutions.

Any concerned citizen or group in the province of Alberta may make recommendations for change by writing to:

Concrete Finisher Provincial Apprenticeship Committee
c/o Industry Programs and Standards
Apprenticeship and Industry Training
10th floor, Commerce Place
10155 - 102 Street
Edmonton, AB. T5J 4L5

It is requested that recommendations for change refer to specific areas and state references used. Recommendations received will be placed before regular meetings of the Provincial Apprenticeship Committee.

APPRENTICESHIP ROUTE TOWARD CERTIFICATION


APPLICATION
CONTRACT AND RECORD BOOK
ENTRANCE EXAMINATION
Reattempt
PROOF OF GRADE 9 OR EQUIVALENT
PASS
FAIL
EDUCATIONAL IMPROVEMENT COURSE
PROOF OF GRADE 9 OR EQUIVALENT
FIRST PERIOD 1200 HOURS WORK EXPERIENCE, ATTENDANCE AND PASSING OF TECHNICAL TRAINING
SECOND PERIOD 1200 HOURS WORK EXPERIENCE, ATTENDANCE AND PASSING OF TECHNICAL TRAINING
THIRD PERIOD 1200 HOURS OF WORK EXPERIENCE
JOURNEYMAN CERTIFICATE
INTERPROVINCIAL EXAMINATION FOR "RED SEAL"

CONCRETE FINISHER TRAINING PROFILE
FIRST PERIOD
(4 weeks-30 per week-total of 120 Hours)

SECTION ONE

HAND AND POWER TOOLS — **18 Hours**

- **A** — Measuring and Layout Tools — 3 Hours
- **B** — Cutting and Demolition Tools — 1 Hour
- **C** — Concrete Placing Tools — 1 Hour
- **D** — Tools for the Surface Treatment of Concrete — 2 Hours
- **E** — Mixing and Conveying Equipment — 2 Hours
- **F** — Power Floats and Trowels — 3 Hours
- **G** — Sidewalk Project — 6 Hours

SECTION TWO

SAFETY — **9 Hours**

- **A** — Safety Regulations and Procedures — 2 Hours
- **B** — Personal Protective Equipment — 1 Hour
- **C** — Fires and Controls — 2 Hours
- **D** — WHMIS — 1 Hour
- **E** — Safety and Maintenance for Power Tools and Equipment — 3 Hours

SECTION THREE

CONCRETE — **15 Hours**

- **A** — Portland Cements — 6 Hours
- **B** — Air Entrainment — 3 Hours
- **C** — Aggregates — 4 Hours
- **D** — Transporting Concrete — 2 Hours

SECTION FOUR

CONCRETE PLACEMENT AND FINISH — **42 Hours**

- **A** — Placement of Concrete — 9 Hours
- **B** — Concrete Finishing — 9 Hours
- **C** — Concrete Joints — 5 Hours
- **D** — Concrete Curing Methods — 4 Hours
- **E** — Place and Finish Concrete — 15 Hours

SECTION FIVE

TRADE MATHEMATICS AND BLUEPRINTS — **36 Hours**

- **A** — Introduction to Applies Mathematics — 2 Hours
- **B** — S.I. Metric System — 2 Hours
- **C** — Imperial System — 2 Hours
- **D** — Lineal Measure — 2 Hours
- **E** — Square Measure — 2 Hours
- **F** — Cubic Measure — 2 Hours

G	H	I
Percentage 2 Hours	Concrete Volume Quantities 7 Hours	Residential Blueprints 15 Hours

CONCRETE FINISHER TRAINING PROFILE
SECOND PERIOD
(4 weeks-30 per week-total of 120 Hours)

SECTION ONE

HAND AND POWER TOOLS 15 Hours ⇨

A	B	C
Concrete Pavers, Power Screeds, Vibrators, and Sprayers 3 Hours	Grinders, Scabblers and Scarifiers 2 Hours	Cutting and Coring Tools 4 Hours

D
Construction Safety Procedures 6 Hours

SECTION TWO

SITE LAYOUT AND FORMS 22 Hours ⇨

A	B	C
Leveling and Grading Procedures 4 Hours	Site Preparation 4 Hours	Methods of Forming 4 Hours

D	E
Concrete Reinforcing and Accessories 4 Hours	Construction of Slab Formwork 6 Hours

SECTION THREE

CONCRETE MATERIALS 15 Hours ⇨

A	B	C
Concrete Design and Dry State Characteristics 4 Hours	Concrete Testing in Plastic State 3 Hours	Concrete Admixtures 4 Hours

D	E
Concrete Toppings and Grouts 2 Hours	Precast Concrete 2 Hours

SECTION FOUR

CONCRETE PLACEMENT AND CURING 32 Hours ⇨

A	B	C
Architectural Concrete Finishes 6 Hours	Hot and Cold Weather Curing 3 Hours	Special Concrete Finishes 8 Hours

D
Advanced Concrete Placing and Finishing 15 Hours

SECTION FIVE

TRADE MATHEMATICS AND BLUEPRINTS 32 Hours ⇨

A	B
Related Calculations 12 Hours	Commercial Blueprints 20 Hours

SECTION SIX

WORKPLACE COACHING AND ADVISORY NETWORK 4 Hours ⇨

A
Workplace Coaching Skills and Advisory Network 4 Hours

FIRST PERIOD TECHNICAL TRAINING

CONCRETE FINISHER TRADE
COURSE OUTLINE

SECTION ONE ..... HAND AND POWER TOOLS ..... 18 HOURS

A. Measuring and Layout Tools ..... 3 Hours

Outcome: Identify and describe measuring and layout tools.

1. Identify measuring tools.
2. Identify hand levels.
3. Describe lines and accessories.
4. Describe miscellaneous layout and alignment tools.

B. Cutting and Demolition Tools ..... 1 Hour

Outcome: Identify and describe cutting and demolition tools.

1. Describe the use of cutting and fastening tools.
2. Describe the use of dismantling and demolition tools.
3. Describe the use of chipping and abrading tools.

C. Concrete Placing Tools ..... 1 Hour

Outcome: Identify and describe concrete placing tools.

1. Describe conveying and distributing tools.
2. Describe vibrators and consolidating tools.

D. Tools for the Surface Treatment of Concrete ..... 2 Hours

Outcome: Identify and describe tools for the surface treatment of concrete.

1. Describe the use of floats and darbies.
2. Describe the use of trowels, edgers and jointers.
3. Describe the use of brushes and finishing brooms.
4. Describe clean up and maintenance procedures for hand tools.

E. Mixing and Conveying Equipment ..... 2 Hours

Outcome: Describe mixing and conveying equipment.

1. Describe types of mixers.
2. Relate the principles of mixing concrete.

3. Relate the principles of concrete transport.
4. Describe concrete conveying equipment.

F. Power Floats and Trowels ..... 3 Hours

Outcome: Identify and describe power floats and trowels.

1. Describe the process of power floating.
2. Describe the process of power trowelling.
3. Identify and describe safe use of power trowels.

G. Sidewalk Project ..... 6 Hours

Outcome: Construct a sidewalk project using a given specification.

1. Layout a sidewalk using appropriate measuring and layout tools.
2. Prepare forms for a sidewalk using appropriate cutting and fastening tools.
3. Place concrete in sidewalk forms using appropriate placing tools.
4. Finish concrete sidewalk using appropriate finishing tools.

SECTION TWO ..... SAFETY ..... 9 HOURS

A. Safety Regulations and Procedures ..... 2 Hours

Outcome: Identify safety regulations as they apply to safe work practices.

1. Define selected terms in the *Occupational Health and Safety Act.*
2. Describe selected general provisions.
3. Describe selected safety provisions for machinery.
4. Describe scaffolding requirements.
5. Describe minimum requirements of ladders.

B. Personal Protective Equipment ..... 1 Hour

Outcome: Identify and describe potential industrial health hazards and the use of personal protective equipment.

1. Describe minimum requirements of personal protective equipment.
2. Select safety clothing and protective equipment.
3. Describe protection in dusty environments.
4. Describe procedures for working with toxic materials.

C. Fires and Controls ..... 2 Hours

Outcome: Recognize and Identify fires and controls.

1. Recognize potentially dangerous fire hazards and assess preventative measures.
2. Identify fires by class to ensure the correct equipment is used for fire control.
3. Locate and identify the fire extinguishers and alarm controls in the shop and learning resources area.

D. W.H.M.I.S. ..... 1 Hour

Outcome: Follow W.H.M.I.S. guidelines.

1. Explain what the letters W.H.M.I.S. mean.
2. List the W.H.M.I.S. classes.
3. Describe the hazard symbols; the general hazards and precautions needed when handling substances of each of the W.H.M.I.S. symbols.
4. Describe the contents required on W.H.M.I.S. labels and data sheets and where they are to be kept and accessed.

E. Safety and Maintenance for Power Tools and Equipment ..... 3 Hours

Outcome: Describe safety and maintenance practices for power tools and equipment.

1. Describe the safety and maintenance requirements of electrically operated tools.
2. Describe the safety and maintenance requirements of gasoline powered tools.
3. Describe the ventilation requirements for gasoline-powered engines.
4. Describe the safety and maintenance requirements of compressors.

SECTION THREE ..... CONCRETE ..... 15 HOURS

A. Portland Cements ..... 6 Hours

Outcome: Identify Portland cement.

1. Identify the different types and make up of Portland cements, and their applications.
2. Describe the applications for the different types of Portland cements.
3. Describe fly ash.
4. Describe silica fume.

B. Air Entrainment ..... 3 Hours

Outcome: Identify and describe air entrainment.

1. Identify and describe air entrainment admixtures.

C. Concrete Aggregates ..... 4 Hours

Outcome: Identify and describe concrete aggregates.

1. Describe coarse aggregates.
2. Describe fine aggregates.
3. Describe the effect of aggregates on concrete quality.

D. Transporting Concrete ..... 2 Hours

Outcome: Describe the transporting of concrete.

1. Describe concrete transportation and placement for forms and decks with reference to consolidation and integration of deposits (lifts).
2. Identify and describe the cause of segregation and the use of chutes, tremies and pumps.

SECTION FOUR ..... CONCRETE PLACEMENT AND FINISH ..... 42 HOURS

A. Placement of Concrete ..... 9 Hours

Outcome: Identify and describe the placement of concrete.

1. Identify site preparation.
2. Describe depositing concrete.
3. Describe consolidating concrete.

B. Concrete Finishing ..... 9 Hours

Outcome: Identify and describe concrete finishing.

1. Identify surface treatments.
2. Describe how to create various surface treatments.

C. Concrete Joints ..... 5 Hours

Outcome: Identify and describe concrete joints.

1. Compare the three basic types of functional joints:
   a) control (contraction) joints
   b) isolation (expansion) joints
   c) construction joints

D. Concrete Curing Methods ..... 4 Hours

Outcome: Describe curing methods.

1. Describe curing without water.
2. Describe curing with water.

3. Explain the importance of hydration to the curing of concrete.

E. Place and Finish Concrete ..... 15 Hours

Outcome: Perform concrete placement.

1. Layout a flat slab.
2. Prepare forms for a slab.
3. Place concrete in slab forms.
4. Finish slab.
5. Place and finish concrete stairs.

SECTION FIVE ..... TRADE MATHEMATICS AND BLUEPRINTS ..... 36 HOURS

A. Introduction to Applied Mathematics ..... 2 Hours

Outcome: Demonstrate ability to complete basic math operations.

1. Complete problems in rounding off numbers.
2. Complete problems in addition, subtraction, multiplication and division using whole numbers.
3. Complete problems that combine addition, subtraction, multiplication and division.

B. S.I. Metric System ..... 2 Hours

Outcome: Calculate metric lengths, capacity and mass.

1. Apply the metric system to measuring lengths.
2. Apply the metric system to measuring capacity and mass.

C. Imperial System ..... 2 Hours

Outcome: Calculate Imperial (pound) math operations.

1. Apply the inch-pound system to measuring lengths.
2. Apply the inch-pound system to measuring capacity and weight.
3. Use fractions in addition, subtraction, multiplication and division.
4. Convert between fractions and decimals.

D. Lineal Measure ..... 2 Hours

Outcome: Calculate lineal measure.

1. Use formulas to calculate perimeters and circumferences.
2. Use the Pythagorean Theorem to calculate problems involving right triangles.

E. Square Measure ..... **2 Hours**

Outcome: Calculate square measure.

1. Correctly identify and use formulas dealing with areas.

F. Cubic Measure ..... **2 Hours**

Outcome: Calculate cubic measure.

1. Correctly identify and use formulas dealing with volumes.

G. Percentage ..... **2 Hours**

Outcome: Calculate percentages.

1. Write percent numbers as decimal numbers.
2. Write decimal numbers as percent numbers.
3. Calculate a percent of a number.
4. Calculate the percentage one number is of another.
5. Calculate a number when a percentage of it is known.

H. Concrete Volume Quantities ..... **7 Hours**

Outcome: Calculate concrete volumes.

1. Study an example estimate of foundation concrete and related work.
2. Estimate a series of concrete and related work problems.

I. Residential Blueprints ..... **15 Hours**

Outcome: Interpret residential blueprints.

1. Read and interpret a set of residential blueprints showing:
   a) foundation plan
   b) floor plan
   c) elevations
   d) sections and details
   e) other trades.
2. Identify and interpret scale rules and how to apply them.
3. Identify and draw detail symbols of materials used in sectional and other drawings.
4. Identify and describe alphabet of lines.

SECOND PERIOD TECHNICAL TRAINING

CONCRETE FINISHER TRADE
COURSE OUTLINE

SECTION ONE ..... HAND AND POWER TOOLS ..... 15 HOURS

A. Concrete Pavers, Power Screeds, Vibrators and Sprayers ..... 3 Hours

Outcome: Identify and describe concrete pavers, power screeds, vibrators and sprayers.

1. Describe the use of concrete pavers.
2. Describe the use of power screeds.
3. Describe the use of vibrators.
4. Describe the use of sprayers.

B. Grinders, Scabblers and Scarifiers ..... 2 Hours

Outcome: Identify and describe grinders, scabbers and scarifiers.

1. Describe the use of grinders.
2. Describe the use of scabblers.
3. Describe the use of scarifiers.

C. Cutting and Coring Tools ..... 4 Hours

Outcome: Identify and describe cutting and coring tools.

1. Describe the tools used to cut concrete.
2. Describe saw blades used to cut concrete.
3. Describe the tools used to drill and core cured concrete.

D. Construction Safety Procedures ..... 6 Hours

Outcome: Review construction safety procedures.

1. Review OH & S regulations.
2. Review the use of personal protective equipment.
3. Review the use of fire extinguishers and fire controls.
4. Review WHMIS regulations.
5. Review the safe use of power tools.

SECTION TWO ..... SITE LAYOUT AND FORMS.....22 HOURS

A. Levelling and Grading Procedures ..... 4 Hours

Outcome: Identify and describe levelling and grading procedures.

1. Describe zoning, bylaws and permits required before preparing site.
2. Identify the location of utilities on a property.
3. Interpret soil analysis reports for slabs on grade.
4. Describe the procedures for cut and fill and compaction.
5. Describe fillcrete.

B. Site Preparation ..... 4 Hours

Outcome: Identify and describe site preparation.

1. Identify builders' levels: their parts, accessories and uses.
2. Identify and describe levelling rods.
3. Describe transfer of elevations.
4. Describe cut and fill and grades or slopes.
5. Identify and describe the use of laser levels.
6. Identify and describe the use of hand levels, line levels and string line to determine elevations.

C. Methods of Forming ..... 4 Hours

Outcome: Identify and describe methods of forming.

1. Identify typical slab on grade forms.
2. Describe beam and girder form systems, including spandrel beams.
3. Identify slab decks and ribbed and waffle systems.
4. Describe the forces transmitted during placement of concrete.
5. Identify critical areas in forms that could cause a failure during concrete casting and describe how forms are designed to minimise this risk.
6. Describe form watching.
7. Identify concrete stairs and forming methods.

D. Concrete Reinforcing and Accessories ..... 4 Hours

Outcome: Identify and describe concrete reinforcing and accessories.

1. Describe the gauges and types of welded wire fabric.
2. Identify type and sizes of deformed bars.
3. Identify reinforcing placement for concrete stairs.
4. Identify steel fibres and fibre reinforcement.

E. Construction of Flat Slab Formwork..... 6 Hours

Outcome: Construct flat slab formwork.

1. Establish the base line.
2. Establish corners.
3. Erect batter boards.
4. Set edge forms to grade.
5. Set grade stakes.
6. Set screeds.

SECTION THREE..... CONCRETE MATERIALS.....15 HOURS

A. Concrete Design and Dry State Characteristics ..... 4 Hours

Outcome: Identify and describe concrete design and dry state characteristics.

1. Define normal and special purpose aggregates and how normal density aggregate quality is controlled.
2. Identify the range of compressive strengths of concrete batches and the typical demands in industry.
3. Compare batching by weight and by volume.
4. Describe the hydration process and how to retain moisture.
5. Describe curing methods in hot and cold weather.

B. Concrete Testing in Plastic State..... 3 Hours

Outcome: Identify and describe concrete testing in plastic state.

1. Identify and describe tests conducted on plastic concrete.
2. Identify and describe various slumps of concrete.

D. Concrete Admixtures ..... 4 Hours

Outcome: Identify and describe concrete additives.

1. Define admixtures for concrete.
2. Identify admixtures, their uses and limitations.
3. Describe the following three most commonly used admixtures:
   a) water reducing
   b) air entraining
   c) accelerating

D. Concrete Toppings and Grouts..... 2 Hours

Outcome: Identify and describe concrete toppings and grouts.

1. Describe where and how topping finishes are used and applied.

2. Identify the basic composition of grouts and mortars.
3. Describe the application of grouts and mortars.
4. Describe patching and bonding materials.

E. Precast Concrete ..... 2 Hours

Outcome: Identify and describe precast concrete.

1. Compare post-tensioned and pre-tensioned precast members.
2. Describe tilt up units.

SECTION FOUR..... CONCRETE PLACEMENT AND CURING ..... 32 HOURS

A. Architectural Concrete Finishes ..... 6 Hours

Outcome: Identify and describe architectural concrete finishes.

1. Describe rubbed and floated finishes.
2. Describe parged and stuccoed finishes.
3. Describe spray-on coatings.
4. Describe the use of white and coloured concrete.
5. Describe exposed aggregate finishes.
6. Describe the use of:
   a) stamps
   b) mules
   c) templates
   d) special forms
   e) form liners.
7. Describe terrazzo, rock salt and travertine finishes.

B. Hot and Cold Weather Curing..... 3 Hours

Outcome: Identify and describe hot and cold weather curing.

1. Explain cold weather curing procedures.
2. Explain hot weather curing procedures.

C. Special Concrete Finishes ..... 8 Hours

Outcome: Identify and describe identify special concrete finishes.

1. Describe the dry shake method of finishing concrete.
2. Describe white and coloured concrete finishing methods.
3. Describe surface hardeners and slip resistance.
4. Describe non-slip finishes.
5. Describe seeded exposed aggregate finishes.

6. Identify commonly used special finishes.
7. Describe the use of epoxies.
8. Explain the application of polyurethane and polyester coatings.

D. Advanced Concrete Placing and Finishing ..... 15 Hours

Outcome: Place and finish concrete.

1. Finish a coloured slab with a stamped surface pattern.
2. Apply a coloured hardener using the dry shake method.
3. Use the water washing and brushing method to achieve an exposed aggregate finish.
4. Use the seeding method to achieve an exposed aggregate finish.
5. Patch and repair concrete curb.

SECTION FIVE ..... TRADE MATHEMATICS AND BLUEPRINTS ..... 32 HOURS

A. Related Calculations ..... 12 Hours

Outcome: Solve calculation problems.

1. Review problems relating to addition, subtraction, multiplication and division.
2. Review problems relating to percentage.
3. Review problems relating to ratio and proportion.
4. Review problems relating to perimeters.
5. Review problems relating to the Pythagorean theorem.
6. Review problems relating to areas.
7. Review problems relating to volumes.
8. Calculate foundation concrete volumes.

B. Commercial Blueprints ..... 20 Hours

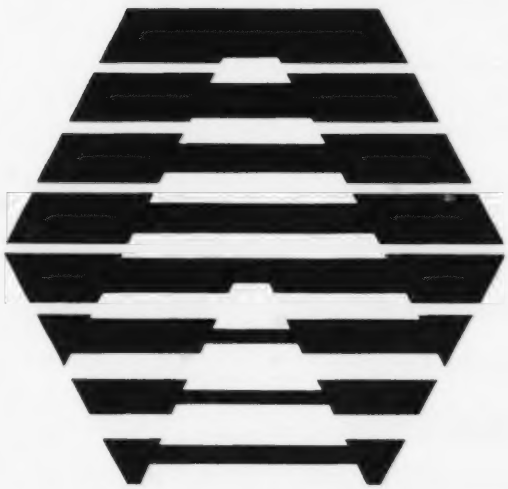
Outcome: Interpret commercial blueprints.

1. Read and interpret a set of blueprints of a commercial building showing:
   a) floor plans and elevations
   b) building sections and elevations
   c) room finish
   d) wall sections
   e) miscellaneous details
   f) structural details
   g) mechanical layout
   h) electrical layout
   i) site plan
   j) details drawings
2. Identify and describe alphabet of lines.

SECTION SIX ..... WORKPLACE COACHING SKILS AND ADVISORY NETWORK ..... 4 HOURS

A. Workplace Coaching Skills and Advisory Network ..... 4 Hours

1. Describe the following coaching skills used for training apprentices:
   a) identify the point of the lesson
   b) link the lesson
   c) demonstrate a skill
   d) provide opportunity to practice a skill
   e) give feedback to the learner
   f) assess the learner's progress
2. Describe the roles and purposes of the advisory network and the Provincial Apprenticeship Committee for the Concrete Finisher Trade.



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